Copy ___of ___Copies
HQ, USFK
CC Seoul, ROK
151930(I) MAY 07

USFK EFFECTS FRAGMENTARY ORDER 07-46 (High Risk Season for Vivax Malaria)

References:

a. USFK Regulation 40-2, Prevention, Surveillance, Diagnosis, Treatment and Reporting of Vivax Malaria in the Republic of Korea, dated 16 October 2006.
b. USFK Pamphlet 385-3, A System Approach to Seasonal Safety, dated 24 April 2007.
c. Assistant Secretary of Defense (Health Affairs) Armed Service Blood Program List 06-03 Memorandum, Revised Standardized Donor Lists for Armed Services Blood Donor Centers, dated 13 December 2006.
d. DoDI 4150.7, DoD Pest Management Program, dated 22 April 1996.
e. AR 40-5, Preventive Medicine, dated 22 July 2005.
f. OPNAVINST 6250.4, Pest Management Program, dated 27 August 1998.
g. AFI 32-1053, Pest Management Program, dated 1 April 1999.

Time Zone. INDIA.

Task Organization. No Change.

1. **SITUATION.** Malaria is a mosquito-borne parasitic disease and major cause of human-illness and deaths in many parts of the world. Plasmodium vivax is the most widely distributed parasite that causes malaria in humans. This disease can affect the health of infected military personnel, degrade unit integrity, divert medical assets from other care issues, and may contaminate the fresh whole blood supply. Malaria is an incapacitating disease characterized by chills, shaking, and periodic bouts of intense fever. Although vivax malaria is normally non-fatal, it can affect large numbers of military personnel in a short time period and poses a serious threat to military operations. On the Korean peninsula, vivax malaria has the potential to affect USFK personnel between the months of May through October annually, and the highest risk areas for transmission are the Joint Security Area (JSA) and Warrior Base. Malaria transmissions typically occur primarily at night because of the dusk to dawn feeding habits of mosquitoes. Consequently, avoiding contact with mosquitoes during dusk-to-dawn hours and establishing a layer of night-time protection from these attacks is absolutely imperative. The effects of this disease are preventable in USFK personnel by employing Preventive Medicine Measures (PMM) in every location on the Korean peninsula, and when appropriate, by taking malaria chemoprophylaxis (medications) in areas with the highest risk. Discipline and correct use of PMM is an effective method in preventing malaria and other diseases, and serves to improve the readiness posture of USFK.

2. **MISSION.** USFK implements preventive measures to preserve the health of the joint force, ensure the readiness of the command, and prevent vivax malaria through awareness, risk reduction, and exposure prevention procedures during the high risk malaria period of May through October 2007.

3. EXECUTION.

a. Commander's Intent.

Purpose: To inform and provide guidance to safeguard USFK personnel against malaria and to ensure they are aware of the appropriate preventive medicine measures to prevent this disease in the Korean Theater of Operations.

End state: USFK personnel are advised of the high risk season for vivax malaria, and they employ appropriate preventive medicine measures to reduce exposure and prevent outbreaks from this disease.

Key Tasks:

- USFK Commanders and leaders will review and ensure compliance with references a and b.
- Ensure enforcement of PMM and malaria chemoprophylaxis as appropriate.
- Inform personnel of the presence of malaria and educate them on the PMM necessary to minimize the risk of infection.
- Ensure all personnel deploying to a field environment and sleeping outdoors have their uniforms treated with permethrin; are issued adequate supplies of insect repellents containing at least 20% DEET; and wear their uniforms with the sleeves down, leg cuffs tucked into boot or bloused with boot.
- During field conditions, ensure personnel sleeping outdoors, or sleeping in structures that allow the entry of mosquitoes, utilize and sleep inside permethrin-treated bed nets.
- Ensure personnel wear insect repellents on exposed skin containing at least 20% DEET during the hours of darkness or as needed to prevent mosquito bites.
- Ensure personnel stationed at the JSA, and all Warrior Leader Course cadre and support personnel utilize malaria chemoprophylaxis (medications).
- Ensure vector surveillance and control is conducted.

Effects: Prevention of vivax malaria, decrease work absenteeism, a healthy and fit joint force protected from disease, and increased military readiness.

b. Concept of Operation. Potential health problems as a result of vivax malaria may be avoided by employing discipline and correct use of preventive medicine measures and techniques, to prevent the spread of this disease. Commanders and individual service members are responsible for employing appropriate measures to reduce human exposure to feeding mosquitoes. Units will ensure all personnel deploying to a field

environment have and utilize permethrin-treated uniforms during field exercises and training events; wear their uniforms in such a manner as to provide maximum protection (i.e. sleeves down, leg cuffs tucked in boot or utilize boot bands); have available and are issued adequate supplies of insect repellents containing at least 20% DEET; and ensure personnel sleeping outdoors, or sleeping in structures that allow the entry of mosquitoes, utilize and sleep inside permethrin-treated bed nets. All personnel stationed at the JSA, and Warrior Leader Course cadre and support personnel, will be placed on a malaria chemoprophylaxis (medication) regimen. Korea is considered malaria endemic in areas north of Seoul along the DMZ with North Korea. Individuals with prolonged exposure in high-risk areas are at greatest risk. All USFK personnel will follow established PMM and take the malaria chemoprophylaxis, as required, for mitigating vivax malaria. Furthermore, all USFK personnel will be notified that vivax malaria may produce symptoms in infected humans two weeks to twelve months after exposure, and anyone with a fever should seek prompt medical care (being sure to notify the attending medical personnel that he/she was potentially exposed to malaria while in Korea).

c. Tasks to Commanders and Staff Directorates.

(1) Review and ensure compliance with References a and b.

(2) Implement and ensure enforcement of PMM and malaria chemoprophylaxis as appropriate.

(3) Ensure units and personnel receive education and training on malaria PMM.

(4) Ensure all personnel deploying to a field environment and sleeping outdoors have their uniforms treated with permethrin; are issued adequate supplies of insect repellents containing at least 20% DEET; and wear their uniforms with the sleeves down, leg cuffs tucked into boot or bloused with boot bands.

(5) During field conditions, ensure personnel sleeping outdoors, or sleeping in structures that allow the entry of mosquitoes, utilize and sleep inside permethrin-treated bed nets.

(6) Ensure unit Field Sanitation Teams order and maintain adequate supplies of uniform repellents (permethrin) and skin repellents (DEET) as a component of the malaria prevention program for use during high risk season.

8th US Army (EUSA)

(1) Ensure all Warrior Leader Course cadre and Warrior Base support personnel, are placed on a malaria chemoprophylaxis (medication) regimen as detailed in reference (a).

(2) Ensure 18th MEDCOM Preventive Medicine Assets provide vector surveillance and control for early detection of malaria as appropriate, and coordinate the spraying of uniforms with permethrin as required.

(3) Ensure 18th MEDCOM Entomology Consultant, Preventive Medicine Officer, and Industrial Hygiene Consultant coordinate with the USFK Engineers to collaborate programs for mosquito surveillance, collection, and control measures.

Commander, JSA. Ensure all JSA personnel are placed on a malaria chemoprophylaxis regimen and employ discipline and correct use of malaria PMM.

USFK PAO. Coordinate with USFK Surgeon and 18th MEDCOM, Force Health Protection to actively publicize preventive medicine measures on appropriate command information nets for the duration of the malaria high risk season to increase USFK personnel awareness.

USFK Surgeon

(1) Coordinate with USFK PAO to provide preventive medicine measures and other appropriate information on malaria awareness to command information networks for the duration of the malaria high risk season to increase USFK personnel awareness.

(2) Coordinate with 18th MEDCOM, Deputy Chief of Staff, Force Health Protection, to ensure preventive medicine measures and other appropriate information on malaria awareness is provided to command information networks and USFK PAO.

USFK Engineers (FKEN)

(1) Be prepared to provide mosquito control on fixed installations in accordance with references d through g.

(2) Be prepared to coordinate with Department of Public Works and Military Public Health/Entomology personnel to conduct mosquito surveillance at fixed installations; and provide capture of mosquitoes for identification, analysis, and recommendations for control measures.

(3) Be prepared to coordinate with 8th Army/18th MEDCOM Entomology Consultant and Preventive Medicine Officer for collection and submission of collected mosquitoes for determining population densities, instituting mosquito control measures, and determining malaria infection rates.

(4) Coordinate with 8th Army/18th MEDCOM Industrial Hygiene Consultant and/or Entomology Consultant, for the calibration of Ultra Low Volume (ULV) foggers for maximum effectiveness.

d. Coordinating Instructions.

(1) Ensure all USFK personnel read, understand and comply with the guidance published in Annex A, US Army Center for Health Promotion and Preventive Medicine Fact Sheet, **Just the Facts...Malaria**, which details information about malaria and outlines recommended protection measures.

(2) Ensure Commanders and leaders learn to recognize and respond to the threat, and employ risk management principles to mitigate the dangers caused by malaria.

(3) Ensure all USFK personnel deploying to a field environment and sleeping outdoors utilize malaria prevention techniques, ensure their uniforms are treated with permethrin and utilize DEET and permethrin-treated bed nets as directed.

(4) Malaria transmission typically occurs from May through October annually. The disease is then expressed about 12 – 18 days later after infection, but may occur a year or more later. Ensure USFK personnel and units on temporary duty for training in a field environment on the Korean peninsula when mosquitoes are present use malaria prevention techniques.

(5) IAW reference c, USFK personnel exposed for greater than six months will

not donate blood for three years after leaving Korea, and USFK personnel present in high-risk areas for less than 6 months, will not donate blood for two years after leaving Korea. Furthermore, exposed personnel will not donate blood while stationed in Korea.

4. SERVICE SUPPORT. No Change.

5. COMMAND AND SIGNAL.

a. **Command**. No Change.

b. **Signal**.

(1) The points of contact for this EFO are LCDR Christopher, Deputy USFK Surgeon, DSN 724-3144, kenneth.christopher@korea.army.mil, and LCDR Richmond, USFK Surgeon's Force Health Protection Officer, DSN 724-6328, vernon.richmond@korea.army.mil.

(2) The point of contact at 18th MEDCOM is LTC Eric Lund, Preventive Medicine Officer, DSN 736-3025, eric.lund@us.army.mil.

(3) The point of contact for USFK EFOs is LCDR Ebersole, DSN 723-6153, carl.ebersole@korea.army.mil.

ACKNOWLEDGE: Receipt to CC Seoul Operations Center via phone DSN 723-3030, or by email to CC SEOUL EOC.

BELL
GEN

OFFICIAL:

MORGAN
J3

USACHPPM
Readiness thru Health

18-040-0107
January 2007

Just the Facts... Malaria

Q. *What is malaria?*
A. Malaria is a serious mosquito-borne illness that is caused by a microscopic parasite which infects red blood cells. There are four species of malaria parasites that can infect humans: *Plasmodium falciparum*, *P. malariae*, *P. ovale*, and *P. vivax*. There are other species of *Plasmodium* that infect animals. The severity of disease depends on the species of *Plasmodium* causing the infection. Infection with any of the malaria species can make a person feel very ill. However, infection with *P. falciparum*, if not promptly treated, can be fatal, and the majority of deaths worldwide are due to this type of malaria. *Plasmodium vivax* and *P. ovale*, although rarely fatal, can develop dormant liver stages that can reactivate after symptom-free intervals of up to 2 to 4 years, respectively.

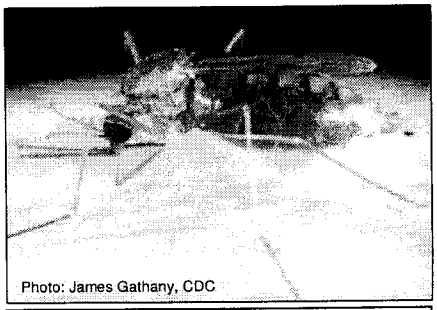
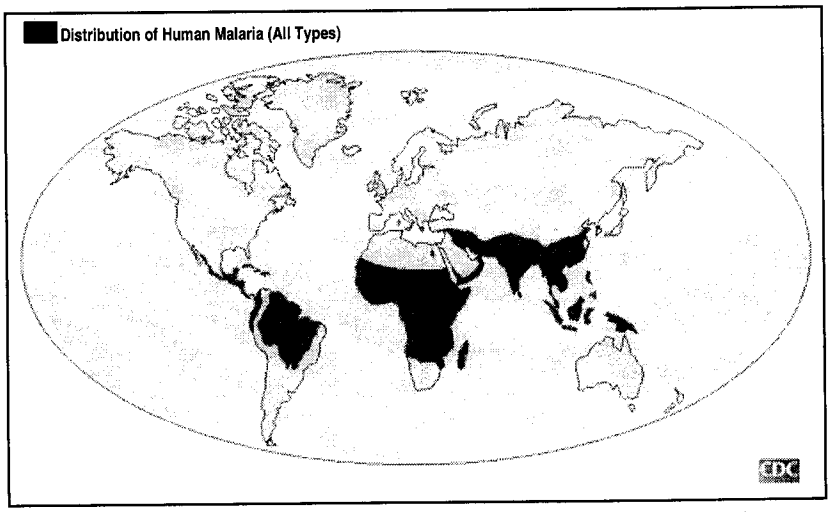


Photo: James Gathany, CDC

A female *Anopheles* mosquito takes a blood meal from a human host.

Q. *How is malaria spread?*
A. Malaria parasites are spread by the bites of infected female *Anopheles* mosquitoes.

Q. *Where is malaria found?*
A. Malaria is most prevalent in warmer regions of the world – typically tropical and subtropical areas, including over 100 countries in Central and South America, Hispaniola (Haiti and the Dominican Republic), Africa, the Indian subcontinent, Southeast Asia, the Middle East, and Oceania. Although risk-free for many years, and despite its more temperate climate, the Korean peninsula is again experiencing malaria along the demilitarized zone (DMZ). Over 1,000 cases of malaria are diagnosed in the United States every year, most occurring in travelers and immigrants returning from malaria-risk areas of the world.



Q. *How many people get malaria?*
A. Each year, 350-500 million cases of malaria occur worldwide, and over one million people die, most of them young children in sub-Saharan Africa.

Q. *What is the malaria life cycle?*
A. In humans, malaria parasites develop and multiply first in the liver and then in the blood, rupturing liver cells and red blood cells in the process. When a female mosquito feeds on the blood of the infected human, it picks up certain "gametocyte" forms (the sexually differentiated, male and female forms) of the blood stage parasites. If the mosquito is a female of the genus *Anopheles*, the gametocytes will then develop and multiply into sporozoites which ultimately reside within its salivary glands. When the *Anopheles* mosquito feeds on another human, the sporozoites are inoculated along with the mosquito's saliva into the new human, and the infectious cycle begins anew.

Q. *Can malaria be transmitted from person-to-person?*
A. No. Malaria cannot be transmitted from person-to-person like a cold or the flu. You cannot get malaria through casual contact with an infected person (e.g. touching or kissing a person with the disease). The primary means of contracting malaria is via mosquito bite. Other, rare means of infection include blood transfusion, organ transplant, use of needles or syringes contaminated with blood, or congenital transmission (infected mother passing the parasite to her fetus during pregnancy).

Q. *What are the symptoms of malaria?*
A. Symptoms vary depending on the specific type of *Plasmodium* involved, but at the outset generally include fever, shaking chills, sweats, headache, muscle aches and exhaustion. Nausea, vomiting, and diarrhea may also occur. Anemia and jaundice (yellow coloring of skin and eyes) can occur due to destruction of red blood cells. Infection with *P. falciparum*, if not promptly treated, can lead to kidney failure, seizures, coma, and death. Symptoms of malaria may continue for weeks or months, with recurring episodes of fever and chills. *Plasmodium vivax* and *P. ovale* have dormant liver stage parasites (known as "hypnozoites") which can reactivate ("relapse") and cause malaria symptoms several months or years later. *Plasmodium malariae* may produce a long-lasting infection that can persist without symptoms (the infection is asymptomatic) for years, or even a lifetime. Malaria in pregnant women can be more severe than in nonpregnant women and can cause adverse pregnancy outcomes, including prematurity, miscarriage, and stillbirth.

U.S. Army Center for Health Promotion and Preventive Medicine, Entomological Sciences Program, 5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403
DSN 584-3613; CM (410) 436-3613; FAX -2037 http://chppm-www.apgea.army.mil/

Q. ***How soon do symptoms appear?***
A. Typically, symptoms begin 10 days to 4 weeks following the bite of an infected mosquito, but range from as early as 7 days to as late as 1 year or longer, depending on the type of malaria.

Q. How is malaria diagnosed?
A. Malaria is diagnosed based on symptoms, followed by laboratory confirmation. The test that is used most widely is microscopy. A drop of the patient's blood is smeared across a slide, stained with a special dye, and then examined under a microscope for presence of the malaria parasites.

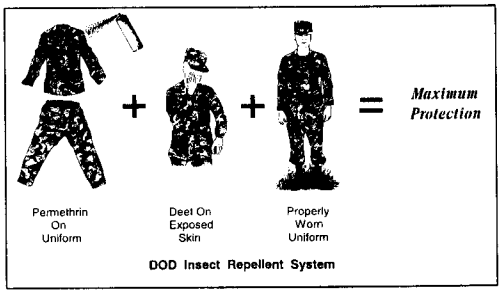
Q. How is malaria treated?
A. Anyone who is sick with flu-like symptoms and has any suspicion that they may have malaria should seek immediate medical attention. Malaria can be effectively treated with a variety of prescription drugs if diagnosed early, and before it becomes severe and life-threatening.

Q. How long does a person remain infected with malaria?
A. If the correct drugs are administered for the proper length of time, malaria can be cured and all the parasites eliminated from the body. However, if the disease is improperly treated, relapses can occur and parasites can persist in the blood for years or decades.

Q. How can malaria be prevented?
A. There is no vaccine against malaria. However, there are oral prescription drugs that can help prevent travelers from getting infected while visiting areas in which malaria is common. It is very important for any person who will be traveling to areas where malaria occurs to consult with their physician about the current recommendations for preventive medications (chemoprophylaxis) against the disease.

Q. What can I do to reduce my risk of becoming infected with malaria?
A. You can help prevent malaria, and other mosquito-borne diseases, by protecting yourself from mosquito bites.

- Stay inside well-screened areas at dawn, dusk, and nighttime. This is when *Anopheles* mosquitoes are most active.
- Wear long-sleeved shirt, long pants, and socks whenever you are outdoors.
- Wear loose-fitting clothing to prevent mosquito bites through thin fabric.
- Use both skin and clothing repellents that have been approved by the Environmental Protection Agency (EPA). They are safe and effective.
  - For your skin, use a product that contains 20-50% **DEET** (N,N-diethyl-meta-toluamide). **DEET** in higher concentrations is no more effective.
  - Use **DEET** sparingly on children, and don't apply to their hands, which they often place in their eyes and mouths.
  - Apply **DEET** lightly and evenly to exposed skin; do not use underneath clothing. Avoid contact with eyes, lips, and broken or irritated skin.
  - To apply to your face, first dispense a small amount of **DEET** onto your hands and then carefully spread a thin layer.
  - Wash **DEET** off when your exposure to ticks, mosquitoes, and other arthropods ceases.
  - For your clothing, use a product that contains **permethrin. Permethrin** is available commercially as 0.5% spray formulations. Clothing that is factory-impregnated with permethrin may also be purchased commercially. Permethrin will withstand numerous launderings.
  - **Permethrin** should only be used on clothing, never on skin.
  - When using any insect repellent, always FOLLOW LABEL DIRECTIONS. Do not inhale aerosol formulations.
- For optimum protection, soldiers should utilize the **DOD INSECT REPELLENT SYSTEM**. In addition to proper wear of the military combat uniform (e.g. ACUs, BDUs) (pants tucked into boots, sleeves down, undershirt tucked into pants), this system includes the concurrent use of both skin and clothing repellents:
  - Standard military skin repellent: 33% **DEET** lotion, long-acting formulation, one application lasts up to 12 hours, **NSN 6840-01-284-3982**.
  - Standard military clothing repellents: either aerosol spray, 0.5% **permethrin**, one application lasts through 5-6 washes, **NSN 6840-01-278-1336**; or IDA (impregnation kit), 40% **permethrin**, one application lasts the life of the uniform (approx. 50 washes), **NSN 6840-01-345-0237**. Factory permethrin-treated ACUs are also available via contract [Contact the Armed Forces Pest Management Board (AFPMB) for details, DSN 295-7476; CM (301) 295-7476].



- Take malaria chemoprophylaxis pills as directed by the medical authority. This is CRITICAL.
- Eliminate mosquito-breeding sites by cleaning birdbaths routinely, and emptying water from old tires and other outdoor containers or debris.
- Make sure that door and window screens do not have holes.
- Vitamin B, ultrasonic devices, and "bug zappers" are NOT effective in preventing mosquito bites.